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ABSTRACT

The Waterbury Board of Education is currently operating a Manpower Development and Training Act (MDTA) project. It includes the Adult Basic Education Program and Occupational Skill Training. The program provides basic elementary education to individuals functioning at or below the third grade level in arithmetic and English, as well as those who are unable to speak, read, or write the English language. The objective of the project is to train unemployed and underemployed youth and adults who have inadequate skills, to obtain and hold jobs, so they may become productive, functional members of society. The subjects were selected from terminees of the program who had been given the Basic Education Test (BET) upon entry and the Adult Basic Learning Exam (ABLE) during the training period. Analysis of variance and trend analysis were conducted and the results indicate that the program was effective in giving its trainees an increase in educational attainment with a linear trend. (Author/CK)

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AN EVALUATION OF THE OCCUPATIONALLY ORIENTED BASIC EDUCATION PROGRAM IN WATERBURY, CONNECTICUT

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A paper presented at the annual meeting of the
New England Educational Research ~~Conference~~ Organization
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Based on a master thesis in educational research at Southern Connecticut State College. The study was conducted as a part of a graduate program in Educational Research under a Federal Grant provided by the United States Office of Education under Title IV of the Elementary and Secondary Education Act.

The Waterbury Board of Education is currently operating a Manpower Development and Training Act (MDTA) project in the former Croft High School, in Waterbury, Connecticut. The project includes Adult Basic Education and Occupational Skill training. The Adult Basic Education aspect of the project is referred to as Occupationally Oriented Basic Education (OOBE). The OOBE program provides basic elementary education to individuals functioning at or below the third grade level in arithmetic and English, as well as those who are unable to speak, read, or write the English language. The OOBE training includes:· Communication Skills, Computation Skills, Community Living, Manipulative Skills. The purpose of the project is to train unemployed and underemployed youth and adults who have inadequate skills, to obtain and hold jobs, so they may become productive, functional, members of society.

Since the public has the right to be informed of the relative success of programs to which it supplies funds, and the MDTA OOBE program is supported by public monies, it must of necessity be evaluated. This evaluation must be made on testable foundations. The MDTA OOBE program has as one of its goals the proposition that the trainees are actually obtaining the education for which they are being trained. To evaluate this proposition, two hypotheses were presented.

1. If a group is given MDTA OOBE training it will then show a continuous gain in educational attainment in Reading, Spelling, Vocabulary, Computation, Problem Solving and Total Arithmetic abilities during the training period.

2. If a group is given MDTA OOBE training it will show a linear trend in learning ability during the training period.

The subjects were selected from terminees of the MDTA OOBE program who had been given the Basic Education Test (BET) upon entry and the Adult Basic Learning Exam (ABLE) during the training period. The subjects were divided into three groups of 31 each. Randomization was used as much as feasible when assigning the subjects to groups. Groups I, II, and III were tested with the ABLE an average of 37.4, 137.2, and 223.5 days after the BET was administered. The design used was a multi-group design, with three groups, which was quasi-experimental in nature because full randomization was not possible.

To test the first hypotheses analysis of covariance was employed to determine if there were significant differences on the ABLE subtest scores for, Vocabulary, Reading, Spelling, Computation, Problem Solving, and Total Arithmetic, using the BET subtest scores for Word Meaning, Reading, Arithmetic, Word Meaning plus Reading plus Arithmetic, and Arithmetic as the respective concomitant variables. Hypothesis 1 was accepted for all except Problem Solving using an $\alpha = .01$ level of significance.

To test Hypothesis 2 trend analysis was employed using the adjusted means of the corresponding analysis of covariances. Hypothesis 2 was accepted for all subtests except Problem Solving using an $\alpha = .01$ level of significance. The problem Solving subtest means showed a quadratic trend significant at the $\alpha = .05$ level.

Because of the preponderance of positive results, the program was evaluated as effective in giving its trainees an increase in educational attainment as measured by the ABLE. Also, the trainees tested showed a linear trend in the ability to learn those factors tested by the ABLE. Therefore the longer a trainee would have been given training, the greater would have been his educational attainment.

SFK/SJB:lcd

TABLE: 1

ANALYSIS OF COVARIANCE - VOCABULARY

Source of Variation	Sum of Squares: X	Sum of Squares: Y	Sum of Products	d.f.	Adjusted Sum of Squares: Y	d.f	Mean Sum of Squares: Y	F
Treatment	4.129	1291.807	-73.032	2	1481.859	2	740.930	8.990 *
Errors	819.161	8728.774	1068.355	90	7335.419	89	82.420	
Total	823.290	10020.581	995.323	92	8817.279	91		

* $p < 0.01$

Test of Homogeneity of the Regression Coefficients

$F(2,87)=0.768$ $p > 0.01$ The slopes are not significantly different, therefore the lines are assumed to be parallel.

Adjusted Means

$\bar{Y}'_{1.} = 23.276$

$\bar{Y}'_{2.} = 28.129$

$\bar{Y}'_{3.} = 33.079$

TABLE: 2

TREND ANALYSIS USING
ORTHOGONAL POLYNOMIALS:
VOCABULARY

Source of Variation	Sum of Squares	d.f.	Mean Sum of Squares	F
Linear regression	1399.779	1	1399.779	16.984*
Quadratic regression	82.080	1	82.080	.996
Errors	7335.419	89	82.420	
Total	8817.279	91		

* $p < 0.01$

Adjusted Totals

$T_1' = 720.556$

$T_2' = 972.099$

$T_3' = 1015.002$

TABLE: 3

ANALYSIS OF COVARIANCE - READING

Source of Variation	Sum of Squares: X	Sum of Squares: Y	Sum of Products	d.f.	Adjusted Sum of Squares: Y	d.f.	Mean Sum of Squares: Y	F.
Treatment	2.860	1415.510	22.634	2	1314.651	2	657.325	7.799*
Errors	237.097	9168.320	628.613	90	7501.683	89	84.289	
Total	239.957	10583.830	651.247	92	8816.334	91		

*$p < 0.01$

Test of Homogeneity of the Regression Coefficients

$F(2,87)=1.730 \quad p > 0.01$ The slopes are not significantly different, therefore the lines are assumed to be parallel.

Adjusted Means

$\bar{Y}'_{1.} = 30.629$

$\bar{Y}'_{2.} = 36.538$

$\bar{Y}'_{3.} = 39.704$

TABLE: 4

TREND ANALYSIS USING
ORTHOGONAL POLYNOMIALS:

READING

Source of Variation	Sum of Squares	d.f.	Mean Sum of Squares	F
Linear regression	1276.512	1	1276.512	15.144*
Quadratic regression	38.139	1	38.139	.452
Errors	7501.683	89	84.289	
Total	8816.334	91		

*$p < 0.01$

Adjusted Totals

$T_1' = 949.499$

$T_2' = 1132.678$

$T_3' = 1230.824$

TABLE: 5

ANALYSIS OF COVARIANCE - SPELLING

Source of Variation	Sum of Squares: X	Sum of Squares: Y	Sum of Products	d.f.	Adjusted Sum of Squares: Y	d.f.	Mean Sum of Squares: Y	F
Treatment	2.860	761.053	5.602	2	750.376	2	375.188	7.556*
Errors	237.097	5052.775	387.645	90	4418.989	89	49.652	
Total	239.957	5813.828	393.247	92	5169.365	91		

*p < 0.01

Test of Homogeneity of the Regression Coefficients

F(2,87)=0.848 p > 0.01 The slopes are not significantly different, therefore the lines are assumed to be parallel.

Adjusted Means:

$\bar{Y}'_{1.}$ = 16.261

$\bar{Y}'_{2.}$ = 19.402

$\bar{Y}'_{3.}$ = 23.208

TABLE: 6

TREND ANALYSIS USING
ORTHOGONAL POLYNOMIALS:
SPELLING

Source of Variation	Sum of Squares	d.f.	Mean Sum of Squares	F
Linear regression	748.043	1	748.043	15.065 *
Quadratic regression	2.333	1	2.333	0.047
Errors	4418.989	89	49.652	
Total	5169.365	91		

*$p < 0.01$

Adjusted Totals

$T_1' = 504.091$

$T_2' = 601.462$

$T_3' = 719.448$

TABLE: 7

ANALYSIS OF COVARIANCE - COMPUTATION

Source of Variation	Sum of Squares: X	Sum of Squares: Y	Sum of Products	d.f.	Adjusted Sum of Squares: Y	d.f.	Mean Sum of Squares: Y	F
Treatment	239.053	805.506	147.011	2	715.579	2	357.790	14.289*
Errors	4129.420	4033.290	2730.000	90	2228.460	89	25.039	
Total	4368.473	4838.796	2877.011	92	2944.040	91		

*$p < 0.01$

Test of Homogeneity of the Regression Coefficients

$F(2,87)=0.080$ $p > 0.01$ The slopes are not significantly different; therefore the lines are assumed to be parallel.

Adjusted Means

$\bar{Y}'_{1.} = 20.055$

$\bar{Y}'_{2.} = 24.511$

$\bar{Y}'_{3.} = 26.725$

TABLE: 8

TREND ANALYSIS USING
ORTHOGONAL POLYNOMIALS:
COMPUTATION

Source of Variation	Sum of Squares	d.f.	Mean Sum of Squares	F
Linear regression	689.610	1	689.610	27.541*
Quadratic regression	25.969	1	25.969	1.037
Errors	2228.460	89	25.039	
Total	2944.040	91		

*$p < 0.01$

Adjusted Totals

$T_1' = 621.705$

$T_2' = 769.841$

$T_3' = 828.475$

TABLE: 9

ANALYSIS OF COVARIANCE - PROBLEM SOLVING

Source of Variation	Sum of Squares: X	Sum of Squares: Y	Sum of Products	d.f.	Adjusted Sum of Squares: Y	d.f.	Mean Sum of Squares: Y	F
Treatment	120.667	238.344	51.720	2	216.179	2	108.090	3.443*
Errors	5848.516	3895.548	2538.323	90	2793.887	89	31.392	
Total	5969.183	4133.892	2590.043	92	3010.066	91		

*p < 0.05

Test of Homogeneity of the Regression Coefficients

$F(2,87)=1.697 \quad p > 0.01$

The slopes are not significantly different, therefore the lines are assumed to be parallel.

Adjusted Means

$\bar{Y}'_{1.} = 9.877$

$\bar{Y}'_{2.} = 12.082$

$\bar{Y}'_{3.} = 13.589$

TABLE: 10

TREND ANALYSIS USING
ORTHOGONAL POLYNOMIALS:
PROBLEM SOLVING

Source of Variation	Sum of Squares	d.f.	Mean Sum of Squares	F
Linear regression	27.731	1	27.731	0.883
Quadratic regression	188.448	1	188.448	6.003*
Errors	2793.887	89	31.392	
Total	3010.066	91		

*$p < 0.05$

Adjusted Totals

$T_1' = 306.187$

$T_2' = 374.542$

$T_3' = 420.259$

TABLE: 11

ANALYSIS OF COVARIANCE - TOTAL ARITHMETIC

Source of Variation	Sum of Squares: X	Sum of Squares: Y	Sum of Products	d.f.	Adjusted Sum of Squares: Y	d.f.	Mean Sum of Squares: Y	F
Treatment	239.053	1919.800	233.483	2	1699.729	2	849.865	9.361*
Errors	4129.420	13680.260	4808.807	90	8080.291	89	90.790	
Total	4368.473	15600.060	5042.290	92	9780.020	91		

*p < 0.01

Test of Homogeneity of the Regression Coefficients

$F(2,87) = 0.927$ $p > 0.01$ The slopes are not significantly different, therefore the lines are assumed to be parallel.

Adjusted Means

$\bar{Y}'_{1.} = 29.815$

$\bar{Y}'_{2.} = 37.024$

$\bar{Y}'_{3.} = 40.000$

TABLE: 12

TREND ANALYSIS USING
ORTHOGONAL POLYNOMIAL:
TOTAL ARITHMETIC

Source of Variation	Sum of Squares	d.f.	Mean Sum of Squares	F
Linear regression	1607.880	1	1607.880	17.709**
Quadratic regression	91.849	1	91.849	1.012
Errors	8080.291	89	90.790	
Total	9780.020	91		

*p <0.01

Adjusted Totals

$T_1' = 924.265$

$T_2' = 1147.744$

$T_3' = 1240.000$